Many Factors Affect Cherry Scald

Discoloration defects in cherries can cause the loss of large percentages of the harvest. The major causes of cherry scald, proven methods of holding down the loss, and a discussion of what many hope to be the best answer to date are discussed here by a group of experts.

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Scald continues to be a matter of major concern in the tart cherry industry. The threat of scald, a discoloration defect, forces severe restrictions on both growers and processors. On hot days, growers may suspend harvesting operations because of excessive scald development. Processors often schedule plant production on the basis of scald development in cherries held in soak tanks.

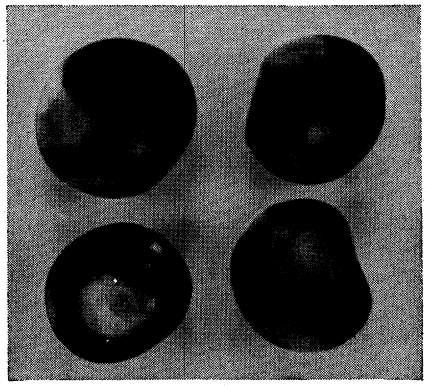
The coming of the mechanical harvester and its sister innovations in handling, sorting and processing methods could easily aggravate the scald problem. During this period of production changes it is highly desirable to make maximum use of methods and equipment that will hold scald at a minimum. Reviewed here are the main factors that control cherry scald.

Table 1

Effects of Repeated Bruising on Scald of Tart Cherries*

Treatment of Cherries		Percent of Total with Scald After 24-Hour Soak at 50°F
Number of Bruises	Time of Bruises (in hours from harvest)	
0	0	0
1	0	0
2	0, 3	34
3	0, 3, 6	76

*Means of four laboratory tests in three years.



SCALD damages cherry appearance.

Bruising Related to Scald

Foremost among factors that affect scald is bruising. Unbruised cherries do not scald (See Table 1). Fortunately, cherries can withstand one bruise without scalding, provided they are maintained at a cool temperature. If, however, they are bruised a second time after a delay period, they rapidly develop scald even at a cool temperature. For example, 34 percent of cherries that were bruised and then rebruised developed scald during 24 hours of soaking at 50°F. Once-bruised samples showed no scald.

In commercial practice, the rebruising that occurs during orchard sorting, handling at receiving stations and unloading at processing plants may be particularly harmful. Many grower-processor teams now avoid the secondary bruise by retaining cherries in their original orchard tanks until time for processing. This practice has reduced scald and increased pack-out yield.

Effect of Temperature and Delay

Scald is sharply inhibited by cool temperatures (See Table 2). For instance, scald counts were 50 percent when cherries were soaked at 90°F, and only 4 percent when they were soaked at 40°F. The industry is making widespread use of temperature as a means of controlling scald. Recently the Michigan Association of Cherry Producers established guidelines that call for a water temperature of 60° F or less as water-hauled cherries arrive at the cannery. Since scald development is also time-dependent (Table 2), processors strive to process cherries within 6 to 12 hours after harvest.

Aeration Under Study

Under some conditions, the bubbling of air through soak tanks inhibits scald (See Table 2). For instance, in laboratory tests at 77°F, aerated samples had an 18 to 11 percent advantage in scald count over non-aerated samples after a 6-hour soak period, and 39 to 32 percent advantage after a 24-hour soak. At cool temperatures (50°F and 40°F), however, no beneficial effects from aeration were obtained. In fact, scald content was increased slightly.

In semi-commercial tests conducted elsewhere, however, Dekazos *(Journal of Food Science,* Vol. 31 (1966), pp. 956-963) obtained 13.9 percent of scald with non-aerated samples soaked for 11 hours at 60°F, and only 2.5 percent of scald with corresponding aerated samples. An additional 2.3 percent of the aerated cherries developed brown spots.

A word of caution concerning aeration should be given. Since aeration promotes oxidative browning of bruised tissues, aerated cherries may show increased numbers of dark brown defects in the heat-processed product. As yet, tank aeration has not been used commercially; additional studies are needed before definite recommendations can be made.

(Ed. Note: The authors are helping one processor conduct commercial-size trials with tank aeration this summer. CANNER/PACKER *will continue to report on new data obtained.)*

Table 2

Effect of Temperature, Delay and Aeration on Scald of Tart Cherries*

Holding Treatment of Cherries (water temp.)	Percent of Total with Scald			
	After 6 Hrs.		After 24 Hrs.	
	Aerated		Aerated	
	No	Yes	No	Yes
40°F	—	—	4	6
50°F	3	3	14	21
77°F	18	11	39	32
90°F	—	—	50	31

*Means of seven laboratory tests in two years.